Environmental Assessment Program

2005-2010 Strategic Plan

PROGRAM VERSION

May 20, 2005

"What do we have to do today to be ready for an uncertain tomorrow?"

(from Peter Drucker, "Managing in a Time of Great Change")

The Environmental Assessment Program.

Photo taken at Program all-hands meeting on March 22, 2005, at Alderbrook, WA
Photo credit: Steve Golding

Introduction

Department of Ecology

The Department of Ecology is Washington's principal environmental management agency. The Department's mission is to:

> *Protect, preserve, and enhance Washington's environment, and promote the wise management of our air, land and water for the benefit of current and future generations.*

The Department of Ecology is guided by its 2005-2007 Strategic Plan (publication Number 04-01-006).

Environmental Assessment Program

The ***Environmental Assessment Program*** is Ecology's primary technical arm, providing a range of scientific, monitoring, laboratory, and quality assurance services in support of the Department's mission.

What is our business?

Our Mission:
Measure and assess environmental conditions in Washington State

What future do we envision?

Our Vision:
Providing credible science to guide Washington's environmental choices

What principles guide our actions?

Our Core Values:
The Environmental Assessment Program values and supports our people and the dedication and expertise they bring to their work. Our credibility and effectiveness depend upon these core values:

- **High quality work**
- **The effective exchange of data/information**
- **Work promoting environmental protection**
- **Work that is relevant**

Our Goals:

The Program supports the Department of Ecology mission through work directed toward the following six program goals:

1) **Monitor, assess and forecast the quality of state waters and measure stream flows statewide.**

2) **Conduct environmental studies for pollution source identification and control.**

3) **Measure environmental contaminants by performing lab analyses.**

4) **Assure environmental labs can provide quality data.**

5) **Improve the quality of data used for environmental decision making.**

6) **Maintain a healthy organization to promote the wise management of air, land and water. We will implement strategies to improve personnel management, budget, infrastructure, and administrative support functions.**

Strengths and Opportunities

- **Skilled, knowledgeable staff**
- **Technology and logistics**
- **Proximity to clients; geographic location**
- **Partnerships and collaborations**

Emerging Issues and Challenges

- **Funding Stability**
- **New pollutants**
- **Improving spatial and temporal coverage**
- **Tiered approach to monitoring**
- **More holistic approaches**

Strategic Overview

The Environmental Assessment Program (EAP) will pursue strategies designed to meet the Program's five environmental goals by using the tools we develop to achieve our sixth goal of promoting a healthy organization. These strategies will guide the Program's annual planning and operations (including budget decisions, project planning, and performance measurement) and overall decision-making into 2010.

EAP supports Ecology's needs for information about the condition and function of Washington's waters and sediments, and serves as a leadership center for the science that drives the credibility of information. The Program is responsible for implementing several long-term (ambient) monitoring programs, conducting directed environmental studies, providing laboratory analytical services, and for administering the state's laboratory accreditation program. We support Ecology's management and regulatory programs, and inform a number of national, regional, state, and local environmental monitoring and assessment interests.

Ecology's monitoring and environmental study efforts must be effectively coordinated at the state, regional, national, and local levels. Actions by the Washington State Legislature (SSB 5637, 2002) and the Governor's Office (Executive Order 04-03, 2004) have resulted in the development of a Statewide Comprehensive Monitoring Strategy (CMS) and the creation of the Governor's Monitoring Forum. The Forum, along with other bodies such as the Puget Sound Ambient Monitoring Program and the Pacific Northwest Aquatic Monitoring Partnership, bring local, state, tribal, and federal agencies together to coordinate monitoring efforts, increase efficiency and effectiveness of individual monitoring programs, and identify and target the most important data gaps.

Our involvement and active partnership with other organizations helps meet and promote Ecology's key business strategies, and an expectation that environmental decisions are based on best professional scientific judgment. Collaborative efforts significantly add to our capacity to meet Program goals.

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Program Goals and Strategies

Goal 1: Monitor, assess, and forecast the quality of state waters and stream flows statewide.

The value of this goal: Long-term monitoring is essential for establishing baseline environmental conditions, understanding human impacts on marine and freshwater systems, detecting and assessing gradual changes in water quality (such as those driven by changing climate or land-use patterns), and measuring the success of resource management programs. EAP assesses the status of state surface and ground waters, identifies threatened or impaired waters, and evaluates changes and trends in water quality over time. We do this through an established statewide environmental monitoring network that includes sampling stations in rivers, streams, and marine/estuarine waters. A significant part of the network was developed to address the basic requirements within the federal Clean Water Act, and the mandate from Chapter 90.71 RCW which directed the development of the Puget Sound Ambient Monitoring Network. We also measure and evaluate stream flows in priority watersheds statewide, and provide significant amounts of data (including near real-time stream flow data) to the public through Ecology's
web site.

Benchmarks:

2003-2005:

EAP maintains marine and freshwater ambient monitoring networks, a limited ambient biological assessment monitoring program, statewide invasive aquatic plants monitoring, and marine and lake beach monitoring to provide overall characterization and assessment of marine basins and freshwater watersheds based on a targeted station design, as well as providing long-term temporal trends at selected stations. Two monitoring efforts, the marine sediment monitoring program and some freshwater bioassessment monitoring, are based at least in part on spatially representative designs. EAP also operates more than 85 near real-time, telemetered stream flow gauges and over 70 staff gauges in (mostly) 11 priority or critical watersheds. Data are incorporated in Ecology's EIM database, and are used by Ecology for the United States Environmental Protection Agency's (USEPA) integrated report (including the Clean Water Act Section 303(d) list, as well as a variety of other reports (e.g. EAP's Water Quality Index Report, the State of Salmon in Watersheds; Puget Sound Conservation and Recovery Plan, Georgia Basin/Puget Sound Transboundary Environmental Indicators Report, and others).

2005-2007:

We will improve our assessment of state waters by engaging new monitoring technologies, and by more clearly defining our core monitoring functions as we leverage additional opportunities for collaborative monitoring through multi-agency partnerships and forums.

Priority Activities:

1) Develop a comprehensive water monitoring strategy for Ecology in collaboration with the Water Quality Program, the US Environmental Protection Agency, the Governor's Monitoring Forum, and other key clients, stakeholders, and partners. The final strategy should define our core monitoring functions and products, and incorporate a tiered approach to monitoring that addresses the appropriate scales of monitoring for Ecology.

   - Complete the 2006 Integrated Assessment in coordination with Water Quality Program.
   - Complete monitoring commitments agreed to as part of EAP's annual regional project solicitation, including requests specifically designed to support Water Quality Program's priority management needs and environmental reporting requirements.
   - Reduce the number of temporarily funded stream flow gauging stations to < 20% of total.
   - Improve our local grant management program to optimize watershed-based collaborations.

2) Participate as an active contributor on the Governor's Monitoring Forum, the Pacific Northwest Aquatic Monitoring Partnership (PNAMP), the Puget Sound Ambient Monitoring Program, and similar interagency bodies mandated to coordinate multiple agency monitoring efforts. Continue to seek collaborations and extramural funding when it supports and contributes to our monitoring mission.
   - Maintain the Puget Sound Ambient Monitoring Program (PSAMP) marine waters and sediment monitoring programs, and expand the sediment monitoring program to include probabilistic sampling surveys of major estuaries outside Puget Sound.
   - Collaborate with the Northwest Association of Networked Ocean Observing System (NANOOS) Pilot Project to expand marine coastal monitoring in concert with federal, state, and university partners.
   - Continue to implement a statewide toxics monitoring program, and develop an integrated state fish consumption advisory program with WDOH and WDFW.
   - Continue to develop and build support for a statewide groundwater quality monitoring program.

3) Engage new monitoring technologies to increase temporal/spatial coverage, improve our overall cost-effectiveness, and to expand our ability to predict important changes in both water quality and stream flow measures.
   - Develop and establish a river and stream monitoring program based on a probabilistic sampling survey design.
   - Install new marine instrument moorings in Willapa Bay, Grays Harbor, and key Puget Sound locations (including some urban bays) to improve temporal coverage for key marine water quality parameters while reducing our reliance on marine flights.
   - Add water quality and weather parameters/sensors to stream gauging stations.
   - Develop a more integrated, ecosystem approach to marine/estuarine monitoring.
   - Increase our marine modeling emphasis and capabilities.
   - Deploy *in-situ* data loggers at freshwater ambient monitoring stations to assess diel changes in water quality characteristics.
   - Fully deploy Hydron (stream flow) database to manage water quantity information.

2007-2010:

We will continue to build on improvements in monitoring coordination and technology, with a focus on improving the statistical reliability, precision, and forecasting capabilities of our statewide water, sediment, habitat, and aquatic biota assessments.

Priority Activities:

1) Using the formal, multi-agency monitoring forums and coordinating bodies, work with new local, tribal, and other-agency partners to coordinate local, regional, statewide, and national data collection and assessment efforts. Develop coordinated, nested monitoring designs, employ transferable technologies, agree on Standard Operating Procedures (SOPs), and follow data management protocols that collectively maximize the efficiency of monitoring efforts initiated at all scales and for all objectives.

2) Target new monitoring programs and develop new tools to better forecast and predict changes in water quality and stream flow that anticipate the most important environmental changes likely to result from continued human development, global climate change, regional weather perturbations, and other environmental changes including environmental management and restoration efforts.
   - Continue to engage new monitoring technologies and partnerships, including remote sensing opportunities, to expand the temporal and spatial coverage of our monitoring programs.
   - Continue to develop modeling tools that improve our forecasting capabilities to better guide future environmental management decisions.
   - Implement a statewide groundwater quality monitoring program.

Goal 2: Conduct environmental studies for pollution source identification and control.

The value of this goal: To prevent pollution of our waters and protect the health of our citizens and ecosystems, we must identify the sources of pollution and take measures to control or reduce such inputs. EAP designs and implements environmental monitoring studies that support Ecology's efforts to prevent or reduce pollution as mandated under the Federal Clean Water Act, the Water Pollution Control Act, and the Model Toxics Control Act. As part of a lawsuit settlement brought by plaintiffs under the federal Clean Water Act, Ecology entered into a formal agreement with the USEPA which requires us to complete nearly 1,500 water cleanup plans (also known as Total Maximum Daily Load studies or TMDLs) by 2013. EAP has the primary responsibility for conducting TMDL monitoring and modeling studies in the agency, and is working with the Water Quality Program to complete the required number of TMDLs by the court-imposed deadline. EAP also evaluates the success of pollution control programs in restoring and protecting the environment, and promotes the use of scientifically defensible "adaptive management" strategies.

Benchmarks:

2003-2005:

EAP conducts pollution studies to address known or suspected problems at individual sites or across regional areas. These directed studies are often requested by Ecology's regional staff, and they span the range from routine sampling for conventional parameters like bacteria and oxygen, to more complex analyses for toxic chemicals like dioxins in fish or pesticides in groundwater. Many of the studies are water cleanup studies, which calculate the total maximum daily load (TMDL) of a pollutant a water body can assimilate without causing violations of water quality standards. Study results are published in scientific reports used for regulatory decision making, formulating policy, and protecting and enhancing environmental health.

2005-2007:

EAP will develop a more streamlined approach to conducting TMDL studies, and take other steps to improve the efficiency and cost-effectiveness of our studies. Directed studies will be designed to support Ecology's client program's needs, including a focus on evaluating measures to attain watershed health in response to best management practices (BMP) implementation and salmon habitat restoration efforts.

Priority Activities:

1) Working primarily with our Water Quality Program clients, we will continue to evaluate more cost-effective, streamlined approaches to conducting TMDL studies for conventional pollutants, temperature, and toxics.
   - Develop Quality Assurance Project Plans (QAPPs) and reporting templates for TMDLs, and standardize our approach to some types of TMDLs (e.g. eutrophication studies).
   - Assess programmatic TMDL development strategies for addressing water temperature impairments and ubiquitous legacy toxics.
   - Address funding shortfalls in groundwater technical support to TMDL studies, and in contracting for thermal remote-sensing surveys.

2) Implement intensive monitoring studies or directed research projects to improve our knowledge of the effects of various land-use practices, restoration activities, Best Management Practices (BMPs), and other management actions on the function of targeted water bodies, using objective measures of watershed health.
   - Coordinate a salmon recovery monitoring program with partner agencies and tribes in intensively monitored watersheds across the state.
   - Conduct forest practices monitoring under the Forests and Fish Agreement in order to provide Clean Water Act assurances to state and private forest land owners.
   - In partnership with the Washington State Department of Agriculture, conduct a pesticide monitoring program in representative urban and agricultural watersheds.
   - Continue to develop expertise and build capacity for stormwater monitoring.
   - Measure the success of pollution control activities implemented under water cleanup and toxics cleanup programs.

3) Coordinate with client programs to develop specific studies and investigations that support their management priorities.
   - Coordinate with the Toxics Cleanup Program (TCP) to address monitoring priorities and project ("soft") funding challenges.
   - Continue to conduct intensive studies of groundwater quality/quantity for the Toxics Cleanup, Water Quality, Water Resources, and Shorelands and Environmental Assistance programs.
   - Explore technical support and capacity-building opportunities with the Spill Prevention Preparedness and Response Program.

2007-2010:

1) Market and develop consultancy relationships with additional client programs in Ecology and with other governmental organizations.
2) Implement a TMDL studies program for marine basins in Puget Sound and the coastal estuaries.
3) As persistent, bioaccumulative toxin (PBT) chemical action plans are funded by the Legislature, design and implement monitoring strategies to evaluate their success.
4) Continue to develop and improve state-of-the-art pollution transport and fate models.
5) Work with clients programs and agencies to link effectiveness monitoring study findings into the adaptive management feedback loop.

Goal 3: Measure environmental contaminants by performing lab analyses.

The value of this goal: Reliable, quality laboratory services are critical to determining the concentrations of environmental contaminants and pollutants in our air, water, and soils. Such services, readily available to Ecology staff, provide the underpinning for many of Ecology's most important regulatory decisions. Laboratory analyses support the full breadth of our monitoring and assessment efforts and are fundamental to understanding environmental conditions across the state.

Benchmarks:

2003-2005:

The Manchester Environmental Laboratory is a full service environmental chemistry laboratory operated jointly by the USEPA Region 10 and Ecology. The laboratory provides technical, analytical, and sampling support for chemistry and microbiology for multiple programs in the agency, other government bodies, and tribal nations.

2005-2010:

Manchester Environmental Laboratory will meet the continuing challenge of supporting Ecology's client programs by providing leading-edge laboratory technologies and technical assistance in a cost-effective, efficient, and highly reliable manner.

Priority Activities:

1) Stay current with technology and methods in order to meet the needs of clients.
   - Replace aging equipment as needed.
   - Purchase new equipment that harnesses technological advancements resulting in more efficient analysis, improved data quality, improved reliability, expanding or enhancing our ability and capacity to identify and quantify chemicals of concern.
   - Implement new methodologies to support Goals 1 and 2.
   - Develop new procedures that improve efficiency, reduce waste, and use fewer resources.

2) Optimally balance workload, production, method development, and staffing with regard to costs/revenues and core agency mission/objectives.
   - Work with clients to help balance laboratory loading throughout the year.
     - Improve understanding between clients and lab staff regarding client needs and expectations.
     - Improve coordination, timing, turnaround, method requirements, and lab performance expectations outlined in quality assurance project plans (QAPP).
     - Increase face-time with clients and provide opportunity for clients to see inner workings at the lab, as well as for lab staff to participate in field sampling trips.
     - Improve coordination between project managers and lab chemists by clarifying roles and responsibilities associated with QAPP review and approval.
     - Develop a communication strategy with clients to ensure their active involvement in laboratory method changes.

- Implement the new facilities plan and update our shared facilities agreement with USEPA.
- Include time for consultations in laboratory workload estimates for communicating with clients and meeting non-standard client requests.
- Cross-train staff for expected workload and implementation of new technologies.
- Utilize intermittent/temporary staff to increase work flexibility and cover peak sample analysis loading.

3) Continue to improve and integrate laboratory Information Technology (IT) systems and resolve connectivity to the agency "forest."
   - Continue enhancing the Laboratory Information Management System (LIMS).
     - Capture additional quality control data in LIMS.
     - Improve data transfer processes from laboratory instruments to LIMS.
     - Integrate Case Narratives into the LIMS.
     - Investigate/evaluate bar code sample tags to improve efficiency and holding time compliance.
     - Implement cost reporting module in LIMS to provide financial data to decision makers.

Goal 4: Assure environmental labs can provide quality data.

The value of this goal: Accreditation helps ensure that laboratories have the demonstrated capability to provide accurate and defensible data. Such credible data is essential to making valid and timely environmental decisions.

Benchmarks:

2003-2005:

Chapter 43.21A.230 RCW allows the agency to accredit laboratories which conduct tests for or submit data to the agency. Accordingly, Ecology manages a program to accredit environmental laboratories for analyses in all typical environmental matrices, including drinking water as a service to the Department of Health. Accreditation assures that environmental laboratories have the demonstrated capability to provide accurate and defensible data. The accreditation program is the primary source of lab performance monitoring for the ~480 participating labs.

2005-2007:

1) Evaluate the potential costs and benefits of becoming an accrediting authority in the National Environmental Laboratory Accreditation Program (NELAP).

2) Develop or adopt a system for automating proficiency testing (PT) tracking so as to allow performance measurement in a more timely manner.

2007-2010:

1) Improve our services to environmental laboratories and clients of such labs (data users) by enhancing the flexibility of on-line database searches by the public and/or subscribers.

2) Establish a permanent forum of environmental laboratories, data users, and acccreditors for Washington laboratories and other laboratories interested in maintaining close contact with the Washington environmental laboratory community to ensure a high quality and responsive accreditation program.

Spokane Waste Water Treatment Plant

Prior to accreditation, 95 labs operated by major wastewater dischargers achieved a success rate of 79% on annual proficiency testing studies. Following accreditation, those same labs, as indicators for all 480 accredited labs, consistently achieve 97% success, readily demonstrating that lab accreditation enhances credibility of data used in making Washington's environmental decisions.

Goal 5: Improve the quality of data used for environmental decision making.

The value of this goal: Data of uncertain quality means the risks associated with making regulatory or other management decisions cannot be properly or reliably evaluated. This undermines Ecology's credibility, and can render entire monitoring programs ineffective.

Benchmarks:

2003-2005:

To ensure the reliability and integrity of data used by the agency, the agency-developed policy 1-21--Establishing Quality Assurance. The Quality Assurance staff provide guidance and training on developing Quality Assurance Project Plans, review project proposals, and consult on sampling design requirements and interpretation of results. This quality assurance function is required by the Environmental Protection Agency for entities such as Ecology, which receive funding for work involving environmental data. Aso, EAP's scientists, modelers, statisticians, chemists, and other specialists assist agency staff by interpreting technical data, reviewing grantee monitoring plans, and supplying information for crucial policy questions in support of agency mandates.

2005-2007:

1) Evaluate the optimal balance and priority of quality assurance (QA) activities given resource limitations, including USEPA's recommendation for independent data quality validation.
   - Evaluate Ecology programs' QA performance relative to their commitments.
   - Provide technical assistance to clients by reviewing monitoring plans and reports.

2) Jointly develop and implement a Credible Data Policy with Water Quality Program which will include ensuring that personnel involved in collection and analysis of data have adequate qualifications (education and experience) to perform assigned duties.

3) Assure adequate QA/QC training for Ecology staff.
   - Provide training on data collection and assessment (i.e. verification, validation, and data quality (usability) assessment).
   - Develop and web-post field and laboratory Standard Operating Procedures (SOPs).

4) Improve use of reported QC data to improve the scientific basis for decisions.

5) EA Program maintains business lead role on Environmental Information Management (EIM) Steering Committee to ensure Ecology's primary environmental data archive is designed and maintained to support environmental decisions.
   - Assure all appropriate EAP data are entered into EIM in a timely way.

2007-2010:

Address design issues with EIM.
- Address continuous data management and archival storage.
- Incorporate Quality Control data into the EIM database.

Goal 6: Maintain a healthy organization to promote the wise management of air, land and water.

The value of this goal: To support the agency mission and meet the environmental goals of the program, we need a healthy program organization that supports staff, provides effective administrative support, and assures that other key services including logistical support are readily available when needed.

Benchmarks:

2003-2005:

EAP's 2003-2005 Biennial Plan addresses the salient administrative and operational issues of the Program, including workforce management, out-of-state travel, laboratory use, laboratory accreditation, quality assurance, and IT business planning. In addition, EAP conducts an annual project planning process to address client requests and allocate staff and non-staff resources among EAP's project work. EAP develops and maintains program policies, reports quarterly performance measures, and periodically updates a field operations and safety manual to provide guidance and safety information for all employees.

2005-2010:

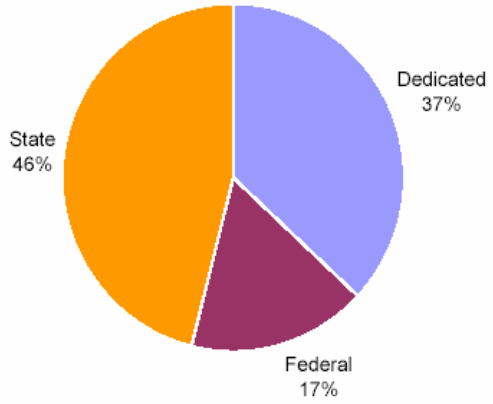
1) Update the Biennial Program Plan and allocate the 2005-2007 budget to support implementation of the Strategic Plan.
2) Establish new program performance measures and tracking systems designed to support the Government Management, Accountability and Performance initiative.
3) Emphasize effective and efficient communications, including implementation of an Internal Communication Plan and development of an External Communications Plan including a plan for marketing EAP's services and capability.
4) Develop an Integrated Program IT Strategy to meet the goals of the Strategic Plan.
5) Complete a Regionalization Plan to develop and grow to meet the collaboration and partnership benchmarks in the Strategic Plan.
6) Staff safety will remain a consistent program priority, as evidenced by pertinent program policies, required training, periodic updates to the field operations and safety manual, active support for Ecology's and EAP's Safety Committees, and updates to Ecology's Chemical Hygiene Plan.
7) EAP will assure Operations Center support, security, and equipment maintenance.
8) Employee development and retention strategies will be addressed as part of the program's Workforce Management Plan.
9) Provide training and professional development to support implementation of our strategies.
    - Job enrichment opportunities will be addressed in staff evaluations.
    - Succession planning and staff development opportunities will be included in the biennial workforce plan.
10) Assure effective and efficient administrative services are available to EAP staff.
11) Provide budget planning and support to program supervisors and management team.

Program Budget

The program budget summary (Fig. 1) shows the proportionate levels of our major funding sources, as well as the relative amount of resources (FTEs and dollars) allotted to each of our major program goals. This represents the distribution of program funds across our goals as a benchmark for the 2003-05 biennium. In order to effectively implement this strategic plan, we will need to sustain and enhance this budget through 2010.

Environmental Assessment Program Plan Summary
2003-05 Biennial Budget

Dollars by Fund Source



Dollars by Activity